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VETERINARY JOURNAL

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JUNE, 1931.

Obituary

THE LATE Mr. H. J. DAWES, F.R.C.V.S.

A GRADUATE of the London College, Mr. Dawes entered the veterinary profession in 1885, commencing immediately to practise in his home town, West Bromwich, and entering at once upon that sphere of activity in connection with the veterinary profession which made him so well known to every member of the National Association and the Midland Veterinary Society. To each of these bodies he had made himself indispensable, and to each one he had been elected by the votes of his fellows to occupy the high offices of President and Secretary, a record quite unique; and it was in the secretarial harness of each that he continued to the end. His common sense and capacity for hard work will be much missed, and his place will be hard to fill. Probably, however, it is as a valued friend and as a member of the Examining Board that he will be missed the most, for his kindly manner would soon place the most nervous student at his ease and doing his best. Elected to the Examinership of Stable Management and Shoeing in 1903, he had occupied this position without a break until his death, and in 1916 the panel of Examiners for the Fellowship claimed him too. As Hon. Secretary of the National, he took his duties seriously, and, although not enjoying the best of health of late years, it was rare to find him miss a Council meeting. His loss to the profession will be widely felt, and the sympathy of the readers of this journal will be extended to his widow, son (also a member of the profession), and two daughters.

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EXPORT OF HORSES FOR THE CONTINENT.

In view of the highly-coloured statements which appeared in the lay press a short time ago, the articles on the above subject which are on a later page, together with the one entitled "A Visit to Vaugirard" by a prominent official of "Our Dumb Friends' League," will be interesting reading. It is of importance to the members of the British veterinary profession, because the responsibility of allowing none other than horses absolutely fit for work in England to be put on the ships rests on the shoulders of the veterinary inspectors of the Ministry of Agriculture; and, from certain articles which were allocated to the most prominent pages of a widely read daily paper, the British public might legitimately surmise that the present-day service of transport provided to carry horses across the seas had relapsed into the terrible condition of affairs which existed before the War. It was largely owing to the efforts of the writer of these articles, whose Society so ably backed up the good work done by the late Miss Cole, that the reproach of the rightly named "England's shame" was at last done away with by Act of Parliament, and it will never be possible for it to return so long as the veterinary officials are, as at present, in control.

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General Articles

THE CULTIVATION OF ANAEROBIC BACTERIA IN MEDIA CONTAINING CYSTEIN.

By Professor W. FREI,
Director, Institute of Veterinary Pathology, Zurich,
AND
G. NORMAN HALL, M.R.C.V.S.,
Veterinary Pathologist, Nigeria.

ANAEROBIC micro-organisms are generally cultivated in media from which the oxygen has been removed either mechanically by exhaustion or by the use of chemical compounds. Further, the process of cultivation is materially assisted by the choice of chemical fixatives which, while acting efficiently on the oxygen content, at the same time have no inhibitory effect on the bacterial growth, or, even better, may serve as pabulum for the bacteria. Such substances, known as "hydrogen donators," possess the property of giving off hydrogen after activation of the molecule by "hydrogen acceptors," of which group in the animal body, or in like manner in the artificial culture medium, the most important representative is oxygen.

Recent investigations by Hewitt (1930), and Knight and Fildes (1930), have shown that for the successful growth of the anaerobic tetanus bacillus the animal tissues or the culture medium must have a certain reducing power—the so-called "reduction potential." Examples of such reducing agents in the animal body, each with a definite reduction potential, are glutathion, cystein, and succinic acid. Thus *B. tetani*, *B. botulinus*, *B. œdematis maligni* (v. *Septique*), and the micro-organism of blackleg, have been cultivated by Hosoya (1925), Quastel and Stephenson (1926), and Valley, by the addition of cystein to the broth, and, similarly, Frei and Riedmüller (1930) have grown *B. novy*, *B. histolyticus*, and *B. perfringens*, as well as those already mentioned, not only in broth with cystein, but also in agar tubes, and on agar plates with cystein. In these last experiments no precautions were necessary to eliminate the oxygen by creating a vacuum or by the addition of pyrogallol.

The same two workers carried out a series of observations, using either cystein, glutathion, thioglycolic acid, glutaminic acid, cuccinic acid, xanthin or natrium sulphide in the media, and found that the

resultant growth was especially abundant in the medium containing glutathion or cystein. The chemical action of these substances, especially glutathion, cystein, and thioglycolic acid (the action of the other hydrogen donators is substantially the same) is as follows:

$$2R.S_H + O = R.S.R. + H_2O$$

Two atoms of hydrogen are liberated and combine with the oxygen. In the case of xanthin, which has been investigated by Dixon, Thurlow, Morgan and Kodama (1924, 1925 and 1926), the reaction has been given as

$$E + X + H_2O = EXOH_2$$
$$EXOH_2 + A = E + XO \text{ (uric acid)} + AH_2$$

where E = enzyme, X = xanthin and A = hydrogen acceptor.

Cystein and certain other sulph-hydryl compounds (— SH —) are supposed to under auto-oxidisation; this, however, is a catalytic process dependent on the presence of metallic traces, especially Fe or Cu, Sakuma (1923), Toda (1928), Abderhalden and Wertheimer (1922), and Warburg. The hydrogen atom of a sulph-hydryl compound is removed during oxidisation either by the oxygen of the air or, in the absence of free oxygen, by any other hydrogen acceptor. As an example, methylene blue may be quoted:

$$2R.SH + \text{methylene blue} = R.SS.R + \text{methylene blue} — H_2$$

(giving leuko-methylene blue, which is colourless).

The aerobic and anaerobic dehydrogenisation of cystein is powerfully inhibited by HCN, but the addition of certain disulphide compounds (R.SS.R, *e.g.*, cystin) accelerates the reaction (Dixon and Tunnicliffe, 1923; and Harrison, 1928). According to Frei and Riedmüller (1930), the dehydrogenisation of glutaminic and succinic acids, which in the animal body is dependent on the action of special enzymes, apparently is not very marked in cultures of anaerobic bacteria, and, accordingly, their influence on the growth of anaerobes is less than that of cystein and other SH— compounds. Succinic acid $COOH.CH_2.CH_2.COOH$ is changed by the loss of hydrogen into fumaric acid, COOH.CH : CH.COOH, and while succinic acid is an hydrogen donator or reducing agent, fumaric acid, on the other hand, is an hydrogen acceptor or oxidising agent. Thus, the presence of fumaric acid serves as an explanation for the inhibition of the aerobic growth of anaerobic organisms, and, alternatively, it can confidently be expected that future investigation will show that the growth of aerobic organisms will be aided by fumaric acid, and inhibited by succinic acid, sulph-hydryl compounds and other H — donators.

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According to the present observations, the action of cystein is

$$2 \text{ cystein} - H_2 + O = \text{cystin} + H_2O$$

The O of the air is fixed by the H of the cystein, so that the anaerobic organisms are able to grow relatively free from the interference of the oxygen.

Some care is necessary in the preparation of media containing cystein, and attention should be given to certain details. In the first place it is essential that the cystein medium should be freshly prepared on each occasion, and, to avoid changes in the composition of the cystein through overheating, the broth or agar should be thoroughly sterilised before the cystein is added. The method is as follows :

(1) Broth is made from ox heart, beef, or horse meat with the addition of 1 per cent. peptone, and 0.5 per cent. NaCl, or (2) tubes are prepared containing agar, 2.5 per cent. These serve for tube or plate cultures. (3) The broth or agar tubes are thoroughly sterilised, but care is taken to avoid overheating the agar. (4) Before the addition of the cystein the stock tubes are melted in a water bath at about 80° C. (5) Cystein hydrochloride is added, usually to give a strength of 0.3 per cent. (6) The medium now appears to be somewhat turbid and the reaction is acid. The pH accordingly is regulated up to 7.4 by the addition of 10 per cent. NaOH. (7) The broth or agar tubes are now subjected to a gentle sterilisation in a Koch's steam steriliser for from one-half to three-quarters of an hour. (8) The agar intended for the making of plate cultures should be inoculated with the respective anaerobe while still in the tubes, thoroughly mixed by rolling between the hands, and, finally, poured out on the sterile plate.

The points which require special attention are : (*a*) Complete sterilisation of the medium before the addition of the cystein. (*b*) The avoidance of overheating the agar. (*c*) If the agar is unduly soft, the diffusion of oxygen into plate cultures may be too rapid, with the result that the oxygen, accepting properties of the cystein, will be over taxed ; under such circumstances no growth will result. (*d*) In similar conditions to those quoted above (*c*) it may be more advantageous to use agar of a higher concentration. In this connection it may be mentioned that agar in powder form has been used in preference to the ordinary strip or fibre agar, which contains more water. (*e*) Occasionally, and this is especially the case when the cystein is added in higher concentrations, the medium becomes somewhat turbid as the result of the precipitation out of insoluble cystein in the

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form of crystals. This turbidity may be prevented by the addition of 0.5 per cent. thiodiglycolic acid.

After inoculation the cystein agar tubes are plugged with cotton wool and placed in the incubator. Proliferation of the anaerobes is rapid both in broth and agar tubes, and a distinct growth may be visible to the naked eye after twelve hours. With regard to plate cultures, it has been found convenient to use the so-called Esmarch plates, which have a diameter of about 5 cm. Under ordinary circumstances the colonies are formed in a circular zone along the margin of the plate, while the central part is free from growth. If, however, a large coverslip, sterilised by flaming, is placed over the central area, colonies will appear underneath the coverslip. After removal of the coverslip the colonies may be picked out very readily. The reducing effect of the cystein is well demonstrated in agar tubes, in which the superficial part of the medium usually contains no colonies. The depth of this clear layer on the surface may be made to vary by altering the proportion of cystein in the medium.

Pure cultures of anaerobic organisms are often difficult to obtain, and not infrequently the occurrence of two or even more species in the same culture has given rise to fallacies in the records of various workers. Indeed, the methods of obtaining pure cultures of anaerobes described in the majority of text-books, in addition to requiring special apparatus and a most involved technique, are often highly unreliable. With the introduction of cystein the process of anaerobic cultivation has been considerably simplified, for not only is it possible to distinguish at a glance various species of anaerobes, but also it has facilitated the isolation of pure cultures from single colonies. The present investigation has not been confined solely to a study of the various anaerobes commonly encountered when making a post-mortem bacteriological examination, but other varieties, both pathogenous and non-pathogenous, have also been investigated. On the other hand, the main purpose has been an endeavour to discover a method which at one and the same time will provide pure cultures, serve to distinguish the two organisms commonly giving rise to serious outbreaks in cattle, *viz.*, *B. chauvei* and *B. œdematis maligni*, and also provide a means of identification of these two species from other anaerobes in mixed infections. This results in a great saving of time and the avoidance of the tedious process of isolation generally used in the cultivation of anaerobes. Cystein agar plates, with or without the addition of glucose, have now been used for this purpose during the last few months. To the stock cystein agar, as described above, 1 per cent. glucose has usually been added, but favourable results

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have been obtained without this sugar. The procedure which has been adopted is as follows :

The freshly made tubes of cystein agar are placed in a water bath, and heated until the agar is in a liquid state. They are then rapidly cooled to 50° C. If the material to be tested is a culture, small quantities in varying dilutions are inoculated by means of a capillary pipette into the liquid agar. The inoculated agar tubes are now well rolled so as to ensure complete distribution of the organisms throughout the medium, and the inoculated liquid agar is then poured into the Esmarch plates. As soon as the cystein agar has solidified, a sterilised coverslip is placed over the centre of the media, and the plates are incubated at 37° C.

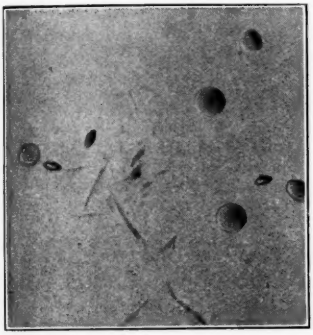

FIG. 1.—Low-power photomicrograph of a plate culture on cystein agar of *B. chauvei*, showing the oval colonies with pointed ends.

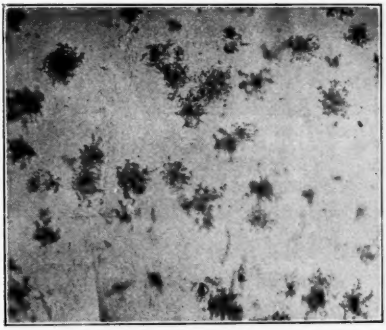

FIG. 2.—Low-power photomicrograph of a plate culture on cystein agar of *B. œdematis maligni* (v. *Septique*). The colonies consist of a central body with protruding filaments.

When it is desired to obtain pure cultures from a guinea-pig which has been previously inoculated with suspected material containing *B. chauvei* or *B. œdematis maligni*, the following procedure has given satisfactory results. Small pieces of infected muscle are ground up with sterile normal saline solution in a sterilised mortar. The ground-up material or suspension is then poured through a flamed piece of fine mesh copper wire to remove the larger particles, while the more fluid part is collected in a sterilised dish. It is then inoculated in various quantities, and in different dilutions, into the fluid cystein agar tubes as previously described. Some idea as to the quantity of the infected liquid necessary to inoculate the agar tube can be obtained

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by staining a smear made from a drop of the meat juice. This will give a rough indication as to the number of the organisms present. The same procedure may be employed for the detection of either

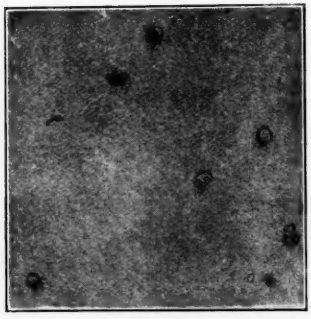

FIG. 3.—*B. œdematis maligni*, showing the round forms with poorly developed filaments.

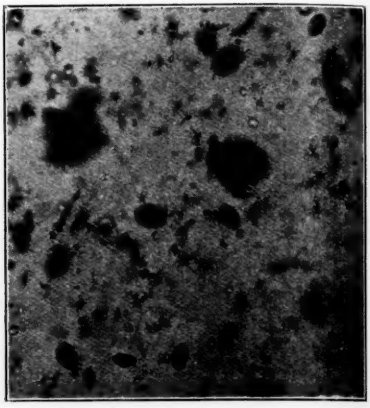

FIG. 4.—Mixed culture showing colonies of *B. chauvei* (smaller oval bodies), *B. œdematis maligni* (in radiating form), and *B. histolyticus* (larger, dark oval bodies).

B. chauvei or *B. œdematis maligni* in suspected material. After seventeen hours or less incubation, well-defined colonies are distributed in the media, especially in the area under the coverslip, which can

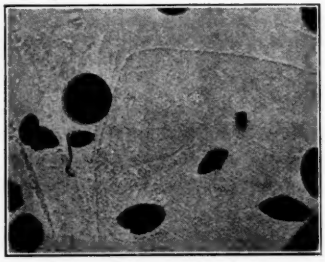

FIG. 5.—Plate culture of *B. histolyticus* on cystein agar. The colonies are large oval bodies with pointed ends.

easily be distinguished under 2/3 magnification. In the case of pure *B. chauvei* infections, typical colonies are well defined, small,

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oval in shape, and generally have pointed ends. Not infrequently, however, some of these colonies appear to be round or oval in shape without pointed ends. They vary in colour from a light to a dark brown, while thread-like filaments have never been observed protruding from the centre. (Fig. 1.)

In plate cultures inoculated with *B. œdematis maligni*, the colonies have a small light-brown centre which is generally round in shape, while protruding from the centre are numerous very fine thread-like filaments which branch and intertwine, thus forming a dense network. Many of these filaments can be traced as a single thread attached to the central body. (Fig. 2.)

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It has frequently been observed that when the agar has been overheated or allowed to cool and solidify after heating, and then re-heated and inoculated with cultures or infected material prior to being poured into the Esmarch plates, growth does not take place. Again, if tubes containing liquid agar are allowed to stand in a water bath at about 50° C. for some time prior to being inoculated with *B. œdematis maligni*, the resulting colonies are often round in form, while the characteristic filaments protruding from the centre do not appear to be prominent and well defined. (Fig. 3.) In both instances the formation of hexagonal cystein crystals is marked after incubation. In sparsely sown material the isolated colonies can be fished out without any difficulty from the inoculated medium.

Although *B. chauvei* colonies can be distinguished from those of *B. œdematis maligni* in culture medium of cystein agar, there are other anaerobes, *B. histolyticus* and *B. welchi*, whose colonies have some resemblance to *B. chauvei*, but it is possible to distinguish the latter from them. (Fig. 4 and Fig. 5). Great difficulty, however, may be experienced in differentiating colonies of *B. œdematis maligni* from those of *B. putrificus*, *B. novy*, and *B. botulinus*. The features described are so characteristic and distinctive that no difficulty presents itself in distinguishing a growth of *B. chauvei* from *B. œdematis maligni*, and, further, afford a quick and simple method of obtaining isolated colonies of anaerobic growths.

REFERENCES.

Abderhalden and Wertheimer (1922) : *Pflug. Arch.*, Vol. 197 ; *ibid.*, Vol. 198.
Dixon, M., and Thurlow, S (1924) : *Biochem. Jour.*, Vol. 18, No. 5, p. 971 ; *ibid.*, p. 976 ; *ibid.*, p. 989 ; *ibid.*, p. 672.

Dixon, M., and Kodama, K. (1926) : *Biochem Jour.*, Vol. 20, No. 5, p. 1095.
Dixon, M., and Tunnicliffe, H. E. (1923) : *Proc. Roy. Soc. Lond.*, Vol. 94, No. B661, p. 266.
Fildes, P. (1927) : *Brit. Jour. Exp. Path.*, Vol. 8, p. 387 ; *ibid.* (1929), Vol. 10, p. 151.
Frei, W., and Reidmüller, L. (1930) : *ZBL. f. Bakt. Org.*, Vol. 119, p. 282.
Harrison, D.C., and Quastel, J. H. (1928) : *Biochem. Jour.*, Vol. 22, p. 683.
Hewitt, L. F. (1930) : *Biochem. Jour.*, Vol. 24, p. 669 ; *ibid.*, p. 676.
Hoysa, S. (1925) : *Sci. Rep. Gov. Inst. Inf. Dis. Tokyo*, Vol. 4, p. 103.
Knight, B. C. J. G. (1930) : *Biochem. Jour.*, Vol. 24, No. 4, p. 1066 ; *ibid.*, p. 1075.
Knight, B. C. J. G., and Fildes, P. (1930) : *Biochem. Jour.*, Vol. 24, No. 5, p. 1496.
Kodama, K. (1926) : *Biochem. Jour.*, Vol. 20, p. 1095.
Morgan, E. J. (1926) : *Biochem. Jour.*, Vol. 20, No. 6, p. 1282.
Quastel, J. H., and Stephenson (1926) : *Biochem. Jour.*, Vol. 20, p. 1125.
Quastel, J. H., and Wooldridge, W. R. (1926) : *Biochem. Jour.*, Vol. 20, p. 115.
Sakuma, J. (1923) : *Biochem. Jour.*, Vol. 142, p. 68.
Toda, S. (1928) : *Biochem. Jour.*, Vol. 172, p. 34.

EXPORT OF HORSES TO THE CONTINENT.

By Major HUME POLLOCK, M.C. (late R.F.A., T.F.).
Hon. Treasurer, Our Dumb Friends' League.

(1) I ARRIVED in Edinburgh by the night mail from London on Saturday, November 29th, 1930, and proceeded to the Docks at Leith, arriving there at 9.5 a.m. I went to the police station close to the Docks, having previously been in communication with the Inspector. The Inspector detailed a sergeant to take me to the police station at the entrance of the Docks, where I found Professor Linton, M.R.C.V.S , who is the veterinary official in charge of the examination of horses for shipment.

(2) In advance of Professor Linton, I went to have a look at the horses at the Edinburgh Dock, and found 58 horses awaiting inspection. A police constable was on duty there, specially detailed for the purpose. He told me that the ship only took 57 horses, and that the dealers therefore did not expect to have them all passed. There were two dealers. I had a hasty walk round in front of and in the rear of the horses with the P.C., and could see that the condition of some would not permit shipment.

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(3) The veterinary surgeon followed almost immediately, and the inspection commenced at 9.15 a.m. outside a large shed. The veterinary surgeon had with him two of his senior students from the Royal Veterinary College, Edinburgh. One made the necessary entries, the other picked up experience, and they changed round at half-time. Directly a horse had passed, the man who had run him up and down received a permit slip, and this was handed to a police sergeant a few yards away, and this sergeant personally put the permits on the horses. I asked him whether there was any chance of horses being exchanged (*i.e.*, a rejected horse being handed to him in place of a passed horse), and he said it was quite impossible under this system. The ground was hard—harder than Goole, softer than London.

(4) All horses were heavy draught, except about three: one unbroken (six-year-old); three vicious (in Scotland called "wicked"), and these have an extra slip beside the ordinary pass slip; no ponies. Professor Linton did as at other ports: he rejected some at once, and if he was not quite sure he would put them aside to come again at the end of the lot. One of these, a liver-coloured chestnut light draught (in Artillery we should have put him down as a "ride") was such a doubtful proposition that he was finally trotted on the hard pavé close by, and this definitely found out the weakness, and he was rejected. The ages varied from five to fifteen and the total result of inspection was: 44 passed, 14 rejected; 58 examined.

(5) Reference the rejected:—I ascertained that they would either go back to work or to the abattoir in Edinburgh suburbs, which, I was told, was about six miles off. Professor Linton said some of the horses I saw were "the poorest class he had had for some time."

(6) The inspection being over, we went to the boat—S.S. "Westland" (Scotland Line Shipping and Coal Co., Ltd.). She lay next to the inspection shed. There was a large water tub a few yards from the ship. Professor Linton took me on board, and introduced me to the Captain and another of the shipping company's officials. The horses were being taken on board by slinging in cradles. No hoods were used; I do not think the horses see the water below them here as they do at the London Docks. One horse was a bit nervous on board, and therefore allowed a free stall on either side of him. The horses were "stabled" as described in my other reports. I did not see any pollcaps used. The hay was good, but one truss has been left out in the wet, and Professor Linton rightly called the

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dealer's attention to it. The hay is supplied by the dealer in arrangement with the shipping company, though the latter are responsible for the supply.

(7) The horses are watered between five and six a.m., at noon, and between five and six p.m. on board. They don't drink much on the crossing. They always have hay in front of them all through the crossing; they feed from wire mangers, which appeared simple and efficient, and I was told they were "invented" on this ship. The Captain informed me that there are always two men on duty with the horses, and more are detailed in bad weather. One of the men on duty reports to the Captain every hour—horses correct, or otherwise. A humane killer is carried.

(8) The sea journey is about thirty-three hours (the longest which this export traffic has). Reports of the weather are received from London, St. Ann's Head and two other places, every morning before ship leaves dock.

(9) Last week the ship encountered a very bad crossing, and three horses were shot on board. The morning reports had satisfied the Captain, who said the storm came on very suddenly. Professor Linton said he did not like them much. The Captain is responsible here; the veterinary surgeon is not; it does not come within his duty. The boat generally leaves at 2 or 3 p.m., or noon. On this occasion she left at 1.55 p.m.

(10) Herewith are the returns, as forwarded to me early this year by the Ministry of Agriculture, up to the end of 1929:—

Year.	Number of Horses shipped to Continent.	Number of Casualties.	Percentage of Casualties.
1920	58,689	42	0.072
1921	45,120	68	0.151
1922	17,936	28	0.157
1923	17,063	24	0.141
1924	25,642	16	0.062
1925	13,477	11	0.082
1926	7,356	5	0.068
1927	10,066	8	0.071
1928	10,526	7	0.067
1929	9,912	10	0.101

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(11) The figures I quote from 1920 to 1929 show casualties as near *nil* as one might humanly expect; at the same time, in my humble opinion, I think when reports appear doubtful, the horses should have the benefit of that doubt. I do not say they were doubtful, but the veterinary surgeon evidently did not like them.

(12) After seeing the horses in process of shipment, the Captain, Professor Linton, the shipping company's official, and myself went to the Captain's cabin, where we had a chat, and everything as to feeding on board (as stated above) etc., was explained to me and Professor Linton volunteered the statement: "This is the best conducted animal trade in Great Britain."

(13) No horses go to Antwerp or Ghent now by that line.

(14) Having left the S.S. "Westland" we went to see five more horses shown by a dealer at the Albert Dock (George Gibson & Co., Ltd.): this dealer had not shown any for five years. The horses were, as a whole, a better class than the last, but two were rejected. The passed horses will go to Amsterdam on the S.S. "Ronan."

(15) Professor Linton introduced me to the Manager of the little office of the Shipping Company, and I found him only too anxious to show me anything on the ship or in his books.

(16) I found that on the ship every fifth stall is left vacant (this to help matters if any casualty took place). A mechanical killer is carried. Boat can carry thirty-six horses. There is always at least one "stableman" on duty. Adequate hay is supplied (again by the dealer), but in addition, the Company always carries sixty-two pounds of hay for each horse.

(17) In the office I was allowed to see all returns and any book I asked for.

I found the casualties *nil* for this year (284 horses); casualties *nil* for 1928 (319 horses); casualties *nil* for 1929 (I regret I have not the number of horses). I did not look further back, as I had the Ministry's returns in my pocket.

(18) In conclusion, I would like to state that wherever I went every question was answered at once without any hesitation; everybody was very "open" with me. The Manager at Messrs. Gibson's said I would always be welcome, and Professor Linton said: "You must come again, as you cannot expect to see much in one 'go.'"

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To the above I would add that the fact that Professor Linton brought two students (paragraph 3) so that they could gain experience speaks for itself—he would not bring them there if he gave wrong decisions. I apparently came on a Saturday when there were more horses of the poor class than usual (paragraph 5). I went straight into the shed before examination ; none could possibly have been kept back on account of my visit ; no one knew I was coming ; I did not know myself till late Friday afternoon.

(19) I had finished everything at the Docks by 12.10 p.m.

AN OUTBREAK OF CONTAGIOUS PLEURO-PNEUMONIA IN EQUINES.

By R. ISHERWOOD, M.R.C.V.S.

School of Veterinary Science, University of Liverpool.

A FEW years ago I was in veterinary charge of a stable of transport animals in Gibraltar, consisting of about fifty horses and one hundred and fifty mules. (I am giving these figures from memory, and they are therefore only approximate.) The purpose of the mules was to convey supplies of various kinds to all parts of the Rock, including the batteries situated on or near the summit. It will be gathered that the work of a considerable number of them was by no means light. With the exception of eight sturdy North American mules they were nearly all rather " leggy " Spanish mules, with a range of ages from six to sixteen years or more. They were housed in good sanitary stables, with concrete floors, at the south end of the Rock, or better, at the south end of the flat portion. The animals were separated from one another by swinging bales. The horses were used either for transport on the level, or as rides. Food consisted of bruised barley, bran, and bhoosa (broken barley straw). The barley and bhoosa were obtained from Spain through contractors, and the bran was a Government issue. Speaking generally, the health of these animals was good, and the commencement of the outbreak of disease of which I am now writing was not until I had had about two years' experience of this " stable."

It was towards the end of the rainy period in the early part of the year, and at this time a few cases of nasal catarrh do not usually give occasion for alarm, but the cases now presented were of exceptional severity. Four mules were affected, and the symptoms shown were loss of appetite, catarrh of the nasal mucous membrane, cough,

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depression, and temperatures ranging between 104° to 106° F. (The sickness had been ushered in by shivering fits during the previous evening.) The conjunctivæ were bright red, and pulse rates between 60 and 70 beats per minute. Examination of the chest at the end of the first day gave no definite information. During the following day three similar cases were added. At this stage I made a tentative diagnosis of influenza, and took all practicable precautions against its spread. In a short time, with new cases added daily, there were about thirty cases, and there seemed to be no reason at the existing rate of progress why all susceptible animals should not become infected. The state of affairs was made still more alarming by the fact that about 80 per cent. of the cases had become definitely pneumonic after three days of illness, and a diagnosis of contagious pleuro-pneumonia was now certain. The type of pneumonia was lobar, and in some of the cases there was a considerable pleuritic effusion.

Bacteriological examination of fluid removed from several chest cavities revealed the presence of diplococci. Diagnosis was further confirmed by post-mortem examination of two cases, which showed fibrinous pleuritis and extensive lobar pneumonia. Meantime fresh cases were continually being reported. They were not confined to one particular stable, nor to one particular kind or age of animal. The infection seemed to be present throughout the stables, and it was apparently not discriminating; during one day a six-year-old horse and a ten-year-old mule from one end of the line of stables would be stricken down, and on the following day a young and an old mule stabled about one hundred yards away would become ill.

How this infection had come to a stable which since its inception had been free of serious disease was not clear. A possible source was the fodder brought in from Spain, and for a time this was discontinued. A careful inspection of the Spanish animals of the district failed to confirm this, and the use of this source of foodstuff was resumed. It was important that this point should be cleared up at the earliest, as it was essential that this source of food supply should be utilised if possible. Another not unlikely method of infection was by way of horse and fodder ships which at that time often put into the port, either to unload portions of cargo or to effect some necessary repair. The possibility of contact between these probably infected ships and the animals of the Rock could not be overlooked. A full report of the nature of the disease had been furnished to the authorities at an early stage, and I had given the opinion that the only likely method of putting a period to the outbreak was to remove all animals from the infected stables, and picket them out at some distance from

them, at the same time thoroughly disinfecting the stables by scraping, by the use of the painter's lamp on all fittings, and by the liberal use of chemical disinfectants on harness, rugs, etc. Objection was made to this procedure on the grounds of expense and inconvenience, but when it became apparent there was more than a little risk of disorganising the whole of the transport system if the present policy were pursued, it was decided to put all the unaffected animals into camp on the British neutral ground. This was effected after a few days, and the animals could now be considered to be in working isolation.

I had anticipated after this event that there would be a few more cases at the very best, as it was rather likely that some of the animals would be in the incubation stage of the disease, but what actually did happen was that the outbreak ended with a snap. There were no further cases, nor was there a suspicion of an aborted one. I could not account for this by accepting the view that the virulence of the virus had subsided, as only on the day previous to moving into camp some of the worst cases had commenced.

On the face of it, it would appear that this was further evidence of the efficacy of sunlight as a disinfectant, and the value of fresh air in the presence of respiratory disease.

OVINE PIROPLASMOSIS IN VENEZUELA.

By EDWARD MORGAN, F.R.C.V.S., D.V.H.
Venezuela.

THE main object of recording this particular case after ten years at least have elapsed is the following: A few months ago Professor Brumpt, the eminent parasitologist of the University of Paris, and Professor Tejeras, of the University of Caracas, called to see the writer in order to discuss some of the diseases occurring amongst animals in the Republic. When I mentioned to Professor Brumpt that we had once a serious case of piroplasmosis amongst sheep in this district, he was inclined at first to doubt the authenticity of the diagnosis; simply on the basis that he had always classed Venezuela as a country free from this disease in sheep, in spite of his knowledge of the prevalency of piroplasmosis in cattle here. Only that particular week he had selected an apparently healthy native steer in the yards of the slaughter-house at Maracay, and had taken a small quantity of its blood (citrated preparation) to Caracas, the capital, a distance of 108 kilometres, where he inoculated a cross-bred heifer (stall fed), and

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produced a serious case of " Texas fever." Nevertheless, when I gave a rather lengthy account of the case to the two professors, Prof. Brumpt was eventually convinced that the disease does exist in Venezuela.

Furthermore, he said it was unfortunate that I had not recorded this case in some well-known journal, so that interested persons like himself could know that Venezuela was not free of ovine piroplasmosis.

Since Professor Brumpt has left Venezuela for Paris, I have turned up some literature where Venezuela as well as the West Indies are mentioned as countries where " Bahesia Ovis " is found. It is needless here to go into detail regarding the microscopic examination of the blood from different organs. This was carried out by the writer in the first place, and afterwards confirmed by a distinguished protozoologist well known to the Liverpool Tropical School.

History.—Several hundred head of breeding ewes of various ages were bought in a district between Coro and Paraguana, a peninsula in the north-west of the Republic in the estate of Falcon. They were secured in small lots in different districts, and then trooped to the nearest port, called La Vela de Coro," from where they were shipped to Puerto Cabello. Upon landing at this port they were taken to some fields near by, where it was pre-arranged to rest them for a week or so before being despatched by rail—a journey of about forty miles towards their final destination, a place situated at a much higher altitude than Puerto Cabello. In a few days' time after arriving at Puerto Cabello a few of the ewes were noticed to be ailing.

Symptoms.—The sheep were found standing with drooping heads over small pools of water here and there, yet there seemed to be no attempts at drinking ; a few had hæmoglobinuria, but the most prominent symptom was that the motions were stained with blood. Jaundice was a prominent symptom in the few which resisted the disease for several days. Unsteady gait ; and in the majority of cases the appetite was completely lost. The few that lingered on for a few weeks were anæmic to the extreme, and reminded one of fluky sheep in their last stage.

Post-mortem.—Jaundice ; spleen enlarged ; small intestine inflamed ; dark-reddish urine in the bladder.

In about a week's time the apparently healthy sheep were despatched to their destination, as it was hoped that a cooler climate would have a beneficial effect. Again, at this place the same complaint was received, and even worse, they were taken ill in greater numbers than at the previous station. Unfortunately the dipping tank was not yet completely finished for dipping the stock, as we had recommended dipping all the flock in order to destroy the ticks.

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There is one point of particular interest in connection with this outbreak of piroplasmosis. There were twelve pedigree English rams recently imported (six Dorset Horn and six Romney Marsh), turned in amongst this flock at this place, with the satisfactory result that not a single one of them manifested any ill-effects, and they all lived for several years after the original native flock was almost wiped out of existence. The healthy condition of these imported rams amongst a flock of diseased native ewes, some of which were dropping daily from tick fever, was contrary to what we usually observe in the case of cattle. These imported sheep visited the cattle yards during the heat of the day, where rock salt licks were deposited, also they were allowed a certain amount of corn, bran, etc. The native sheep were wild, and kept themselves as far as possible from the yards. Eventually I ordered them to gather the remnant of the flock to the yards, where they acquired the taste for salt as well as other food. The results proved most satisfactory: not only did the symptoms of piroplasmosis disappear, but the ewes soon improved in condition, and the pallid mucous membranes and jaundiced skin regained their normal appearance.

I should like to emphasise the fact after nearly seventeen years' experience in the tropics of Venezuela, where, unfortunately, I have had more than my share of cases of piroplasmosis to attend amongst live, and sometimes dead, stock, that it is a hopeless task to attempt keeping imported cattle free of piroplasmosis unless a liberal quantity of salt is allowed for the animals. Dipping-baths should be fixed in certain areas so that the animals can be immersed in a suitable solution about once a fortnight in order to free them of ticks. I mention *cattle*, because in the tropical regions of Venezuela neither the climate nor the pasturage is suitable for sheep raising, although extensive degenerated flocks exist on cactus and scanty herbage in the estates of Falcon and Lara. The conditions seem to suit goats better than sheep. The goat-skins exported from these two sections of the country are well known in the United States as well as the European market.

SURGICAL SHOCK.

By FRANK CHAMBERS, O.B.E., F.R.C.V.S.
Wolverhampton.

ALTHOUGH we as veterinary surgeons have not the same amount of surgical shock to contend with in animals following serious operations or injuries that is seen in man, yet this condition often occurs, and has to be treated. Shock is frequently seen following severe

injuries from " run over " accidents. A dog will be hit by a motor car, and although no evidence of a fracture or severe internal injury can be detected, yet the membranes will be blanched, respirations shallow, pulse hardly perceptable, and the animal will be practically unconscious. This latter symptom will often last for hours, and yet with suitable treatment the animal will soon make a complete recovery. Nervous shock preceding an operation cannot very well be said to occur in the animal world to the extent that it does in man. Some " highly strung " dogs seem to know that something dreadful is going to happen to them, and it is best in cases of this kind to administer a small dose of sedative or hypnotic before placing them on the operating table. The rupture of an internal organ, without excessive hæmorrhage, will produce great shock. A good illustration of this is seen in the case of rupture of the stomach in the horse. Following rupture of the serous and muscular coats, when the mucous membrane is still intact, vomiting can, and does, occur. There is a certain amount of distress and pain, violent regurgitation of flatus. The pulse is full although its pace may be accelerated, and yet immediately rupture of the mucous membrane occurs alarming symptoms are exhibited. The character of the pulse alters. It becomes thin and rapid. There is accelerated respiration, patchy sweats are seen, and the horse assumes an anxious appearance, in other words, a clear picture of shock. In operating it is known that incisions with sharp instruments are less harmful than those which tear or bruise the tissues. Prolonged exposure of the viscera to the air all help to produce shock. I have heard it stated that a preliminary anæsthesia of the skin by a local anæsthetic whilst the patient is completely narcosed prior to an abdominal operation, lessens the risk of surgical shock, but I have never tried this to prove the correctness or otherwise of this assertion.

Lovatt Evans, in his fascinating book " Recent Advances in Physiology," states, in a chapter on Surgical Shock : " It is obvious if at any time a very large proportion of the enormous total number of capillaries in the body may be shut down, while at another time they may be opened to the blood stream, that such change must produce alterations in the capacity of the vascular system which are incomparably greater than could be affected by any ordinary alterations in the tone of the arterioles. Krogh has found, for instance, that the volume of blood in the active muscles of the guinea-pig may be 275 times as great as when at rest, while if all the capillaries were dilated fully, there would be 750 times as much. Evidently then, when extensive dilatation of the capillaries occurs, we have to take into account not only the reduced peripheral resistance, but also

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the greatly increased capacity of the vascular system. This is one of the factors which are responsible for the seeming disappearance of blood from the circulation after the administration of large doses of histamine, the blood percolating into the lax network of channels as into a sponge. The heart, though beating as vigorously as ever, has but little blood to expel, and the animal ' bleeds into its own dilated capillaries,' so that heart and veins become empty. In internal organs the capillaries may be seen to be flushed and distended with blood. In addition to this, there is, as already explained, an actual loss of fluid by percolation through the walls of the dilated capillaries, so that there is also a real loss as well as an apparent loss of fluid from the circulation. Great practical importance attaches to these facts in connection with pathology of surgical shock, or ' secondary shock,' and the shock-like state of collapse which is often seen in the terminal stages of general infections. The central fact in surgical shock is a loss of blood volume, often in part due to hæmorrhage; but (*a*) chiefly to loss of plasma by filtration to tissues, (*b*) stagnation of blood in the peripheral part of the circulation, especially the capillaries. In generalised affections there is a similar state of affairs: the similarity between these conditions and the shock induced by large doses of histamine, as studied by Dale and Laidlaw, is so close as to suggest that they have not only similar manifestations, but a similar, if not a common, fundamental origin, to wit, that the clinical conditions are due to the action of histamine or substances resembling it in their action, and which are produced as a result of damage to the tissue. Though this hypothesis has not been directly proved, it is an extremely attractive one which has much to support it. Substances which resemble histamine, and histamine itself, can readily be extracted from nearly all tissues after death, and it seems not unreasonable to suppose that such substances liberated from tissues damaged in the course of accidents or operations involving much handling, may find their way into the general circulation, and produce their effects there. There is direct experimental proof that this is so, for Cannon and Bayliss, and others, have shown that the crushing of a limb in an anæsthetised animal results in a shock-like state, but if the vessels of the injured limb are occluded before the mechanical injury is effected, shock does not result until the vessels are released, so that the products of injury are admitted into the general circulation.

" It is interesting to note that in this connection, hæmorrhage, anæsthetics, such as ether or chloroform, but not nitrous oxide (Dale), or exposure to cold, lower the resistance of the animal on the one hand, to the action of histamine, and on the other hand, to the development of surgical shock."

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In formulating measures to be taken to prevent surgical shock, the first essential is that the operating theatre must be warm, and that the patient should not be allowed to get cold. This applies equally well to the after-treatment. This can be done by the aid of an electric blanket, or, failing this, hot-water bottles. Some surgeons pour into the abdominal cavity a quantity of normal saline solution, at a body temperature, before closing up the wound in the abdomen. In the animal, one can give a transfusion of artificial blood serum in large quantities quickly, and without discomfort. This cannot be done so readily in man. Some authorities state that the injection of such transfusions are transitory in their action, and Professor Bayliss (*British Medical Journal*, May 18th, 1918) has suggested the use of a colloidal substance which remains in the blood vessels, and exerts osmotic pressure, and of the various colloids available, recommends gum arabic. Any solution containing this substance must be given intravenously, and this operation presents some difficulty in the small dog. An intramuscular injection of pituitrin should be given immediately the patient recovers consciousness, and this drug can be repeated at intervals until all danger has passed. The injection will have the effect of constricting the smaller arterioles and increasing the amount of blood for the heart to pump on.

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THE EXPORTATION OF HORSES TO THE CONTINENT.

By FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.

THANKS to the control by the veterinary inspectors of the Ministry of Agriculture, there is now no such thing as " Old Horse Traffic," or " Decrepit Horse Traffic " in animals sent abroad, as *all* which are exported, whether purchased for the abattoir or for work, have, before being allowed to set foot on the ship, to pass a most rigid veterinary inspection by qualified veterinary officials appointed by the Government ; and in Holland the subject of humane slaughter of all food animals is placed on a much higher plane than we have it in England. In that country by law *all* animals slaughtered for food *must be stunned to insensibility before the knife is used on the throat.* It is the most humane country in the world in this respect. Switzerland also has the same law, the latter country including the animals slaughtered for the supply of Jewish meat.

Some societies still try to collect funds with the " Old Horse Traffic," or some such title, as the slogan ; but the extract (quoted below) from pages 21 to 23 of the 1931 R.S.P.C.A. Report expresses the

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situation fairly, and relates the good deed done to help the humane slaughter idea forward in France:—

Exportation of Horses for Butchery.

The total export of all the horses, including those for foreign army remounts, racing, breeding, etc., was, in 1930, 9,063, a decrease of nearly 1,000 compared with the previous year.

It is, naturally, the wish of us all that the traffic in butchery horses should cease altogether, and that we should be able to guarantee all English horses destined for butchery purposes on the Continent should receive a humane end on this side of the water. Unfortunately, at the time of writing, we have not received from the Ministry of Agriculture the 1930 figures of the carcase trade from this country, but in comparing the details of 1929 with the previous year, we were glad to note the trade had increased by nearly 7,000 carcases during 1929.

It is exceedingly difficult to ascertain the precise purpose for which the dealers send horses abroad, especially in view of the fact that the Ministry of Agriculture's inspectors have strictly maintained the high standard of fitness of the animals passed by them for export from the areas under their control. We are very glad to recognise that these inspectors have maintained that high standard. We are informed by the Ministry that no horses were exported to Belgium for immediate slaughter in 1930, but, of course, it is well known that English horses sent to Belgium, after having done more or less work, find their ultimate way to the slaughter-house. In spite of the energetic work of the Belgian Federation of S.P.C.A.S., and particularly of the Royal S.P.C.A. of Antwerp, if these animals are sent into country districts they may be stunned with such instruments as the blunt hammer, because, although the recent Belgian Royal Decree makes stunning necessary, it does not make the use of the humane killer compulsory for this purpose, as is the custom now in the Antwerp public abattoir.

A large number of these animals are still sent to Holland, and, whilst one recognises with gratitude that the humane killer is used in Holland for all animals intended for slaughter for food there, one would wish that the Dutch people could be persuaded to adopt the carcase trade as so largely obtains in Belgium, and also to a certain extent in France.

It was found that the conditions of the slaughter-houses in the latter country were not at all satisfactory, and that the animals were still being despatched with the blunt hammer.

We cannot, of course, directly influence the conditions of the

slaughter-houses in Paris, and it is only fair to say that the authorities are cramped by lack of space and impossibility to increase the area occupied by the slaughter-houses, as the city has grown up around it, but they are anxiously studying methods of improving the general lay-out and management of the abattoir.

It is now common knowledge that the Chairman and Chief Secretary of the Society visited the Vaugirard abattoirs (Paris) in June last and offered the President of the Société Hippophagique, on behalf of this Society, that if he would give a definite undertaking that all horses slaughtered at Vaugirard would be killed by the means of a humane killer, and if, in addition, a special representative of the Society were permitted to be at the slaughter-houses at any and all times, the Society would, at its own expense, supply the authorities with the necessary number of humane killers and a sufficient quantity of ammunition for twelve months' work.

This offer was accepted, and on the 2nd October, 14 killers and 80,000 cartridges were formally presented by Sir Robert Gower to the butchers and slaughterers there. At the presentation, representatives of the British Embassy, of the Prefecture of Police, the President and Vice-President of the French Horse Butchers' Association, many officials of the Paris municipal slaughter-houses, representatives of the Municipal Council of Paris, as well as a large number of butchers and horse slaughterers, attended. In a telling speech, in which he referred to the close Anglo-French relations in the Great War, and his joy at seeing the two nations collaborating in the cause of humanity, Monsieur Aramon, Deputy for the Seine Department, introduced Sir Robert Gower to those present. Sir Robert Gower, in making the presentation on behalf of the R.S.P.C.A., said: "I would like to thank those responsible for this opportunity of showing that, although we are an English Society, we are anxious and willing to co-operate in the prevention of unnecessary suffering to all animals throughout the world. Our cause is not national; it is international." In replying, one of the leading butchers said: "Tell the Royal Society that we will use the pistols and will know how to take care of them."

In persuading the Société Hippophagique to adopt the use of humane killers, it was felt that as Vaugirard is the principal horse slaughtering centre of France, any good results obtained there would have great influence throughout the country.

As soon as delivery of the pistols had been made, the Society's representative in Paris, having received a special authorisation from the Prefect of Police, paid daily visits to Vaugirard, in order to organise a proper system of instructing the butchers how to use the

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instruments, of issuing the cartridges, and of keeping the killers in working order. Thanks to his energy, daily attendance, and tact, and the hearty co-operation of the French authorities, many difficulties which had arisen or had been created by a few slaughtermen who were not sympathetic to this reform have been overcome. Indeed, it has been testified by representatives of two other Animal Protection Societies that the humane killers are in regular use. One of these informed us that she had visited Vaugirard on many occasions, and every time she had seen the killers in use and no other method employed. She added: "The men are quite won over by the simplicity of the method."

Besides presenting these killers and cartridges, and providing for additional killers to take the place of any that might be out of order, and thus eliminating the chance of reversion to the hammer because no killer was available, it is satisfactory to note that the master butchers, who are anxious to co-operate in this work, have undertaken to bear the cost of the maintenance and cleaning of the instruments. They have further expressed their complete willingness, should a municipal bye-law be introduced, loyally to carry out the stipulations of such a measure.

It is comforting to know that the R.S.P.C.A. has, by this means, not only benefited any English horses which may find their ultimate end in these slaughter-houses, but that the enormous number of horses destroyed at this abattoir, many of them from other countries, are now receiving a merciful end, brought about by this reform.

It is interesting to record, as a further result of the visit of our representatives to Paris, that the Society has also presented humane killers and cartridges to the Lyons abattoir. Through the keen interest of Monsieur Herriot, a Past-President of the French Senate, and at that time Mayor of Lyons, a bye-law has been passed in that city. It is much hoped that Monsieur Herriot, when he resumes his Parliamentary duties, will introduce remedial measures for the whole country, as his great interest in the question of humane slaughter is well known, and in the meantime it is encouraging to learn that the use of the humane killer is making progress in France.

A VISIT TO VAUGIRARD.

By Major H. HUME POLLOCK, M.C. (late R.F.A., T.F.).
Hon. Treasurer and Member of Council of Our Dumb Friends' League.

PART I.

I VISITED the Vaugirard abattoir on Saturday, February 7th last, and I should like to state at once that though I had read a lot about this place, I went there with an absolutely open mind. Although

Saturdays are very small working days, I thought it best to get a good insight of the place in order that I should be better able to carry out my visit on the following Monday, which is one of the three busy working days of the week.

Making my headquarters at Amiens, I arrived in Paris at 9.50 a.m., and through the kindness of a friend to whom I had written previously, I was able to be at the abattoir by 10.45, and to obtain admission at once. No one except my friend knew that I was coming, and it was evident to me that everything was being carried out in the usual way.

On my arrival I was immediately introduced to an official who was working in the laboratory—I understand the authorities are very particular as to the purity of the meat—and to Capt. Harris, who is the representative of the R.S.P.C.A. there, and has the right of entry at all times.

The establishment is owned by a private syndicate of about six or seven butchers. It has been established 15 years, with another sixty-five years lease to run. They kill about 75,000 to 76,000 horses a year there. A short time ago it was 80,000. No English horses went for butchery for five years before 1930. In 1930, 108 went for butchery (out of 75,000 slaughtered), and all were certified as killed by the mechanical killer. We have sent none since September, 1930. I am told the rates of freightage are too high for the dealers. There are two stables for horses, one being very much larger than the other. Each stable is divided off into sections for the various butchers. I should say one stable holds 120 horses, and the other 250 horses when full, but though I intended to measure them, I regret to say I did not do so. There were about 180 horses in the place at the time. Each horse is weighed at the entrance of the abattoir before he passes in.

I found that food and bedding (if any) differed according to the various sections. Some had straw bedding and some none. Water is supplied by direct pipe to the mangers (which are continuous and not divided). There are proper hay racks above, but I saw considerably more straw than hay. I will refer to watering and feeding arrangements later.

The eating of horse-flesh in France is on a very big scale, and horses come from many countries; these include Spain, Germany, Italy, Lithuania, and America, and France supplies a large quantity herself. The German horses were the best, others were, on the whole, very poor, and some extremely debilitated.

There are about ten sheds, and the carcases hang on either side

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of the places where horses are shot. Arrangements are crude as compared with Rotterdam (the separating of the different parts of insides of the animals is not detailed so efficiently). One of the main reasons of this must be the cramped conditions and the very large numbers of horses which are killed on the busy days. I regret I have no note, but this must amount to about 350 on three days of every week.

I saw three horses killed on this day, and in each case the Schermer pistol was used. I never saw a hammer. The pistols and cartridges are supplied by the R.S.P.C.A., and Capt. Harris, their representative, conscientiously carries out his duties. I was introduced to most of the leading people and butchers connected with the place.

Inside the gates and high rails, but annexed to the stables and killing sheds, is a large place, covered in, divided off by countless rails, generally divided off. On these rails are rings at about the right interval. If each ring was occupied there would be about 150 horses, and more can be tied to the high railings which divide the establishment from the street outside. All the standings are on *pavé*.

There are also offices for the veterinary inspectors of meat, Police, and administration. Police guard the entrance, and a notice is exhibited prohibiting the public from entrance unless they have a pass.

There was so little doing that I left about 12 noon with Capt. Harris, and having had luncheon, he took me to the pistol repairing workshop. There are twenty-two Schermer pistols given by the R.S.P.C.A. He has had the greatest difficulty in keeping them in good repair. At first many of the butchers would not fall in with the use of pistols, and they kept on getting out of order ; they still keep getting out of order, but some men are better than others. Two or three butchers have their own pistols. It is evident that Capt. Harris, who speaks French fluently, has had to use an immense amount of tact with the men who use the pistols, as he had no authority. The workshop, which is quite close to the abattoir, is placed at Capt. Harris's disposal by the President of the Butchers' Syndicate. He is sympathetic, as are some others. The pistols are cleaned once a week, and without this shop it would be very difficult to keep the pistols in action. Capt. Harris tries to keep, and practically always has, four or five pistols in reserve. He has a list of their numbers, and the names of the men to whom each is issued.

Capt. Harris is still wrestling with this difficulty, but before the close of 1931—perhaps before the close of the half year—it is thought extremely probably that a bye-law will be passed by the Municipality making the use of pistols imperative. The butchers will then have

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to see to the cleanliness and efficiency of the pistols themselves. There is very good ground for believing this will take place.

Unfortunately it cannot be said that the pistol is even now solely in use. Very occasionally a greater number get out of use than usual, and the hammer has to be used to get through the day's work.

On leaving the workshop, about 3.30 p.m., thanks to the courtesy of Capt. Harris, we went back to the abattoir. I was anxious to see how many horses were there for Sunday, and how they were and would be provided for. We went through the stables, and in all there must have been some 150 horses and a few mules. Some had bedding, but I think the majority did not. Capt. Harris interrogated various people for me, and I understand that all the horses are watered and fed morning and evening. Horses for killing are not fed for six hours previously. Each butcher has a stableman on duty. No horse is in the stable more than four or five days before being killed.

PART II.

On Monday, February 9th, 1931, I re-visited the Vaugirard abattoir at 10.30 a.m. I had obtained permission to enter, but was not challenged (they start the day at 5 a.m.). I walked round the stables, and found horses with more bedding than Saturday, and almost all had straw or hay to eat, less hay than straw. The stables were much fuller than on Saturday. I soon met Capt. Harris, who was just taking an efficient pistol to replace one already out of action. He said he could show me this and that, and then let me go anywhere I wanted to by myself.

The market which I referred to in Part I was crowded with, but not quite full of, horses, ponies, with a few mules and a donkey; some had come from Germany, Spain, and Morocco. I went very carefully round all horses: some seemed quite sound and in good condition, others were far from it. I saw very sore withers, very sore shoulders, sore backs, big legs, feet which could not possible take a shoe as they were so broken and enlarged, a greasy heel, very sore and running eyes, some half blind, and one quite blind

Among the lot I saw two old British Army horses. They were both black L.D's. One had come from Germany, so perhaps he had been taken prisoner. The other was clipped out, and was feeling the cold very much; I was glad to see it was killed before I left, as it was completely worn out. Many felt the cold very much; some few had rugs on. Those not sold on Monday will probably re-appear on Wednesday for sale.

In a short time we met the senior police inspector. I wanted to know why some were tied up so short, and what power the police

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had. He said the horses were tied up tight because some were so fatigued with long journeys that it was a rest to them to rest their jowl on the bar. I therefore went back to see how this stood, and although I thought the bar a little bit too high, I have no doubt that it is a rest to them, as I watched some, and kept going back. He also said some were biters. To my second question he said that the police had power to stop men ill-treating horses.

I watched some of the killing, and again I did not see a hammer. The horses invariably had to walk between carcases, some dozen yards, to the actual spot. Personally, I do not think the horses mind the actual carcases. Most horses dislike anything unusual to them; they would very probably shy at a piece of white paper on the dark surface, moreover, horses do not mind the smell of blood (as I have seen stated) until it putrifies. I very particularly watched a blood polo pony which had been pawing the ground incessantly outside. I am certain he did not know what was going on. With a high-couraged pony like that, one would expect some resistance to anything abnormal. He only had a loose hemp halter on; he gave hardly any trouble at all. He would not keep his head steady, so a piece of sacking was put over his eyes, and then he was easily shot. From outside the shed to the time of the shot could not have been two minutes.

With reference to the killing sheds. The very name of "slaughter" or "butchery" is repugnant to people who are fond of horses. The mechanical killer has pretty well removed the word "butchery" as we understand it. I look on it as extremely humane. As I have said, the horses do *not* mind the entrance to the sheds, nor the sight of blood and carcases, as I have seen stated at times. If they did they would not go in with a hempen head collar led by one man.

With reference to the absence of bedding, I do not think there is anything terrible in this. My own two chargers did not have bedding for more than three or four nights during my three and a-half years' Army service in France and Flanders. I do not think they were much the worse for it, although I longed to get it for them.

Among the horses I saw was one tied to a cart waiting inside the abattoir; it was disgracefully debilitated, and had an old Army rug on, with the intention, I presume, of covering his condition up. Among the items I learnt were that there are three big cattle abattoirs in Paris (one next to the horse abattoir). They are run by the Municipality, but between them they only have a few mechanical killers. There is a very good chance of getting the bye-law passed for the compulsory use of the mechanical killer for the horses first. I also learnt that horses are not allowed to be destroyed in the streets of Paris. If a horse is badly injured it is not, as our law provides, allowed

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to be killed by a veterinary surgeon. It must be taken to an abattoir in a float and destroyed there, no matter how near death it may be; but that is nothing to do with this market or abattoir.

I think the behaviour of the men in the abattoir is brutal and callous, and the whipping that I saw is quite unnecessary. One horse was being led to be killed, and was lame on three legs. I thought he was making a very courageous show, but because a man was walking behind him with another horse, that man needlessly slashed him several times with a knotted-thong whip. The same occurred in the stables. The senior inspector of the police there (who told me about the tying-up of horses) said the police in the market were there to stop men "ill-treating" the horses; but I never saw a policeman interfere.

I have tried to show that the actual killing and killing arrangements are not so bad as I have read about; it is the brutal handling, callousness, the exhausted and worn-out condition of horses in the market, the shocking state in which some of the horses arrive in the market, which I would draw attention to. In many cases horses I saw would come under the English law which provides for them when "it is cruel to keep them alive."

The R.S.P.C.A. and their representative, Capt. Harris, have done a great work, and it was obvious to me that the latter must have worked hard and incessantly to have made the use of the hammer a back number; some of the butchers are sympathetic to the use of the mechanical killer, as I have pointed out, but he must have used, and must be using, a deal of tact to get the others to use it. They are both very much to be congratulated.

I want to look all facts in the face in the most practical manner, and it must be fully borne in mind that the place is French, and entirely in foreign hands. I have, of course, tried to set forth the above in the greatest practical detail, and I will never be associated with wild and fanatical statements; they do more harm to the animals one wants to help than good. I have not touched on sentiment, but only on the practical side.

Clinical Articles

Rupture of the Heart.

By C. W. CARTWRIGHT, M.R.C.V.S.
Dyserth.

THE subject of this case was a ten-year-old thick-set butcher's cob, obtained on a few days' trial with a view to purchase. He was a high couraged horse, and had been doing the same class of work

for years apparently without a day's illness. The prospective buyer was well satisfied, and had already in his mind decided to purchase. The day before the expiration of the trial arranged, he was trotting along at a moderate pace, when he suddenly faltered, then fell headlong, and, after a few convulsive movements, expired. A post-mortem examination, made in the presence of the interested parties, disclosed a quantity of blood in the pericardium, and a complete rupture about 2½ in. long in the left ventricle. Extending for about an inch superior to the rent was a line of cicatrized tissue showing distinctly that an incomplete rupture had previously occurred. In view of this, the matter was amicably settled by the owner accepting all responsibility. This is an example of a satisfactory post-mortem examination.

Transient Ascites.

By C. W. CARTWRIGHT, M.R.C.V.S.
Dyserth.

AN urgent message was received to visit an eighteen months old *barren* heifer stated to be very blown. The subject was poor unthrifty looking, very anæmic, and scouring. Until a couple of days previous she had been tucked up, but since then the abdomen had rapidly enlarged so that she had the appearance of being heavily in calf, and could only move with difficulty. There was no tympany; the tremendous enlargement was obviously due to ascites.

Liver fluke was suspected as the cause, for the same condition often occurs in sheep as the result of acute fluke invasion of the liver. This was confirmed by an examination of the fæces, which was reported to show an exceedingly heavy infestation of fluke ova. Suitable treatment was adopted, together with tonics, with the best results. The ascites disappeared almost as suddenly as it appeared. She made a good recovery, and is now one of the best cows in the herd.

Acidosis or Pregnancy Toxæmia in Ewes.

By W. R. McKENNA, M.R.C.V.S., D.V.S.M.
Huddersfield.

THE loss of six ewes a month before lambing time occurred amongst a flock of thirty. Post-mortem examination showed the ewes to be in very fat condition, and the only obvious macroscopical post-mortem lesion was an advanced fatty degeneration of the liver. Symptoms of isolation from the rest of the flock, constant lying down, stiffness in gait, preceded coma and death.

The flock had been summered and wintered in one place of small

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acreage, and during the winter had received a generous ration of cake, etc. Undoubtedly the restricted area of grazing had a distinct influence on the production of excess of fat, and fatty degeneration of the liver.

Treatment in six cases consisted of calcium gluconate injections in doses of 50 c.c., but, as was expected, with no response, except in one ewe. This sheep showed similar symptoms to the other affected animals, but an hour after the calcium injection it was up and feeding with the rest of the flock. Further preventive treatment consisted of as much enforced exercise as possible, together with removal of concentrates from the diet, hay only being sparsely fed. Alkalines in the form of sodii bicarb. were prescribed in addition. No further deaths occurred, and lambing proceeded normally a few weeks later.

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Pulpy Kidney Disease in Lambs.

By W. R. McKENNA, M.R.C.V.S., D.V.S.M.
Huddersfield.

I HAVE not been familiar with this condition previously, and the most detailed account I can find in veterinary literature is that given in the VETERINARY JOURNAL for May, 1929, where it is discussed at considerable length by Dr. James Stewart, of Cambridge University, under the title of " High Protein Diet and Renal Disturbance in Sheep."

I have encountered one small outbreak amongst lambs this spring, several well-conditioned lambs of eight to ten weeks old dying suddenly without noticeable preliminary illness. Two lambs were sent to us for post-mortem examination, and the lesions found were identical. There was slight congestion of both lungs and a very definite accumulation of straw-coloured fluid in the pericardial sacs, whilst the only noticeable abnormality in the abdominal cavity was the gross pathological change in the kidneys. These organs were reduced to soft friable masses. The carcases were very well nourished.

In the article of May, 1929, Professor T. B. Wood is quoted as expressing the opinion that " the excessive consumption of proteins is the cause of many of the sudden deaths amongst sheep," and that " the extra work thrown on the kidneys by excessive protein consumption may cause a serious derangement which results in sudden death." Feeding experiments on high protein diets to batches of lambs carefully carried out at Cambridge are detailed by Dr. Stewart, and he states that as a result " it must be agreed that high protein diets are not in any way responsible for the condition in sheep known as pulpy kidney disease."

Other observers have failed to incriminate any micro-organism,

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and consequently it is difficult to give advice to one's client as to preventive measures. In this case, however, the withdrawal of all concentrates from the lambs' ration as a precautionary measure has been followed by a cessation of the fatalities.

Interdigital Cysts.

By HERBERT BUCKINGHAM, M.R.C.V.S.
Norwich.

THE subject of this photograph had another cyst, quite as big, on one of its hind feet. All three made their appearance within thirty-six hours.

Photograph showing some typical interdigital swellings.

If I receive a case of an unbroken cyst, I clear away hair and anæsthetise with ethyl chloride. I then use a dental syringe with a

very short and fine needle, prick the cyst, and let any liquid escape. I then fill the same syringe with a saturated solution of common washing soda and ordinary tap water, and introduce the needle into the cavity through the same small orifice. This is done carefully because if the orifice is too big the solution will escape. (Keep clear of any joint.) The water should be put on the carbonate of soda and allowed to stand several weeks, and kept at a temperature of 70° F. before using it. In about two to four days a wash-leather ulcer will make its appearance. It will look ugly and big at first, but heals quickly. I do not do anything to the lesion for two clear days. There may be pain lasting two to three minutes, but I have never known another cyst to appear between the two same digits.

Sometimes I have a complicated cyst, and in these cases I use ethyl chloride and lance deeply, bringing the scalpel well up towards the joint above, and then well down, even dividing the skin connecting the two toes at lower extremity. In some cases I inject the solution under the sub-dermal tissue. I never have had any bad results. I have yet to be convinced that any inoculation or any medicine per mouth is of any use whatever.

Curious results of Canker of the Ear.

By J. C. GAUNT, M.R.C.V.S.
Searcroft, Leeds.

A WORKING sheep dog (Cur-Gordon Setter) developed canker which reacted to treatment quickly. The ear was cleansed and dressed three times with blue ointment (ung. hydrarg.). Although apparently cured, he would answer the " echo " of any whistle, and actually go away from me, although he could see me. He died in 1929. His successor, a young cur bitch, occupied the same brick kennel, and recently showed signs of canker. Treatment was the same as before. She recovered, and now does the same thing, namely, answers the whistle " echo." She certainly did not do this a few months ago. The canker seems to have left this bitch slightly deaf, but I do not think my old dog was. How can the above symptoms be accounted for ?

The Value of X-Ray in Diagnosis and Prognosis of Fracture of the Femur in the Dog.

By J. H. WHITE, M.R.C.V.S.
Liverpool.

History.—A bull-terrier, four years old, was brought to me on September 5th, 1930. He had been run over by a motor car about half an hour previously.

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Diagnosis.—Palpation of the right hind leg revealed that there was a fracture of the shaft of the femur. There was considerable swelling in the region of the fracture, and also a slight wound on the internal aspect of the limb, but no evidence of a compound fracture. It was decided to have an X-ray photograph taken, and the limb was placed in a temporary splint. This examination was made the same afternoon, and confirmed the original diagnosis. Radiograph clearly showed the fracture—a comminuted one, and displacement of bone.

Treatment.—The temporary splint remained in position for thirty-six hours, and was then removed. It was found that nearly all the swelling had disappeared, and that the wound was of a very superficial nature. Both hind limbs were totally enclosed in plaster of Paris bandages, and joined by a similar bandage over the back. This was done to limit as far as possible all movement of the hind limbs. The dog made no attempt to interfere with the bandages.

The appetite and general condition remained good. Three weeks later the owner was anxious to know what progress had been made, and whether there was a reasonable chance of complete recovery. Another X-ray photograph was therefore taken, and in this external and internal callus formation was plainly shown, and the isolated piece of bone appeared to be undergoing absorption.

The bandages were removed on October 6th, 1930, and it was found that although the animal's action was stiff, and that there was considerable atrophy of muscles, he could bear weight on the affected limb. The dog remained in the infirmary for another ten days, during which time the limbs were massaged, and exercise was increased gradually. Despite the extensive displacement of bone there was only slight shortening of the limb, so slight as to be hardly noticeable. When seen three months ago he was in perfect condition, and there was no trace of lameness. This account of the case would have been completed had it been possible to take a third radiograph; the two, however, clearly demonstrate the value of radiographs taken at regular intervals in a case of this type.

Reviews

A System of Bacteriology in Relation to Medicine. By various authors. Prepared under the auspices of the Medical Research Council and edited by Paul Fildes and J. C. G. Ledingham. London: H.M. Stationery Office. 21*s.* per volume or £8 8*s.* for the nine volumes.

It has been a great achievement on the part of English bacteriologists to produce our own Kille-Wasserman Handbuch. Dr. Paul Fildes and

Professor Ledingham, the general editors, together with a team of distinguished collaborators have produced a comprehensive account of bacteriology which will prove of inestimable value to English-speaking bacteriologists.

Vol. I, 1930, p. 374, commences with a most entertaining account by the eminent medical historian, William Bulloch, of the history of bacteriology, and ends with J. A. Arkwright's masterly chapter on bacterial variation. Chapters on the morphology and physiology of bacteria, the theory of disinfection, and the principles of classification complete the book.

Vol. II, 1930, p. 420, comprises the staphylococci, streptococci, pneumococcus, gonococcus, meningococcus, influenza group of bacilli, bacterium pneumosintes, Ducrey's bacillus and Morax-Axenfeld bacillus. The first two chapters are a disappointment to the veterinary graduate. The rôle of streptococci in disease of animals is dismissed in about half of one page, whereas the account of human disease due to these organisms occupied twenty-seven pages. To treat one of the most widespread and dangerous causes of disease and death of domesticated animals as an afterthought may appear quixotic to a medical writer, but is tragic to the veterinary reader. The chapter on staphylococci would have been improved by veterinary collaboration ; we failed to find any mention of botriomycosis.

Vol. III, 1929, pp. 413, contains a useful systematic survey of the anaerobes by Miss Muriel Robertson, and a very valuable account of tetanus by Paul Fildes. The chapters on botulism, bacterial food poisoning, and plague are well written. The bacterial diseases of insects and of plants provide very interesting reading after the arid chapters on the bacteriology of water, milk, and other foods and soil bacteria.

Vol. IV (1929, pp. 482) deals with the enteric group of organisms, the vibrios and the pasteurella. Apparently Bruce White was not altogether happy when describing the diseases of animals due to the salmonella group, and especially when discussing the methods of immunisation ; experience in the control of these diseases in the field would have benefited his otherwise very satisfactory chapter. The organism of ewe abortion described by Bosworth and Glover (VETERINARY JOURNAL, 1925, 81, 319) deserved at least a mention.

Vol. V (1930, pp. 506) contains chapters on glanders, melioidiosis, diphtheria and diphtheroid organisms, tuberculosis, Johne's disease (by A. W. Stableforth), leprosy, Brucella infections, anthrax, tularæmia and bartonella. The full account of glanders by F. C. Minett, prefaced by William Bulloch's historical notes, would have been improved by at least a reference to Professor Gaiger's personal sufferings (*Proc. Roy. Soc. Med*, 1928, 22, 996), lasting fifty-two months, and involving eighty-two operations, following infection when examining the exudate of a glandered pony in India. The possible spread of diphtheria by animals has been inadequately discussed by the author of Chapter III, who will find the material facts and references to literature in the " Medical Annual, 1930 " (" Diseases of Animals Communicable to Man : a Review "). The niggardly references to the diseases of animals due to the diphtheroid organisms is reminiscent of a text-book of bacteriology for the development of a catholicity of knowledge in medical students. There is evidence

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that the author of the chapter on anthrax is not familiar with the disease in farm animals under field conditions. If the diagnosis of Brucella abortus infection in man is discussed, we have overlooked it. Stanley Griffith has written a very good account of tuberculosis.

Vol. VI (1931, pp. 538), the latest volume to be published, is a comprehensive survey of immunity. It contains chapters on bacteria in relation to disease, natural immunity, active immunity, antigens and antibodies, bactericidal action, hæmolytic action, complement, opsonic action, agglutination precipitins, anti-ferments, anaphylaxis and related phenomena. The last chapter on chemotherapy is of especial interest to veterinary pathologists in the tropics.

We have found Vol. VII (1930, pp. 509), the most attractively written and best balanced of the seven books. It is confined to the viruses and the bacteriophage, consequently the greater part, if not the whole, of this volume will be liberally thumb-marked by veterinary pathologists. Sir Arnold Theiler, I. A. Galloway, J. Walker, and J. P. Rice contribute to its pages.

We look forward to the 9th volume, which apparently will include the general subject index. The individual volumes contain no index, and they would have been improved by headings which indicated the subject matter of individual pages. The volumes are of convenient size and weight, and the printing is admirable. It is to be hoped that in future editions the Medical Research Council will enlist the collaboration of veterinary bacteriologists for the improvement of certain chapters showing inexperience on the part of their authors in dealing with animal disease in the field. The chapters written wholly or in part by veterinary bacteriologists only serve to emphasise the deficiencies in otherwise useful accounts of bacterial groups common to animals and man.

T. H.

Our Friend the Horse—"Lest We Forget." By Major-General Sir John Moore.

No man has proved his loyalty to the horse more than our distinguished colleague, Major-General Sir John Moore, and the latest effort which he has made is characteristic of the enthusiastic and well thought-out manner in which Sir John takes up the cudgels on behalf of whatever cause he champions, whether it is that of the unemployed men who at one time gladly served under his command in France, or, as in the present instance, that of the dilapidated Veterinary College, whose cause he has, as every one of its students and old graduates know, so heartily adopted.

The amount of good work which Sir John Moore has done for the veterinary profession since his retirement is stupendous, and, except for those who had the privilege of coming into close contact with him during the Great War, its members can never realise how great a part his tactful leadership played in the success of the units which made up the Royal Army Veterinary Corps.

In this little brochure of 32 pages, Sir John has briefly set down a clear and unvarnished account of the history of the Corps from the outbreak of war until after the Armistice; and it is most interesting reading both to the layman and to the professional.

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The object of the book is to found a " Lest We Forget " fund, to perpetuate the memory of the animals who died in the Great War, by founding a Chair (or some such useful commemoration to alleviate animal suffering) in the Royal Veterinary College.

The books are not charged for, and anyone who desires a copy should write to the Secretary, Royal Veterinary College, Camden Town, London, N.W.1. The work is illustrated by a photograph of Earl Haig on his favourite charger, and a number of pictures of veterinary hospitals, and other things of interest which were part and parcel of the doing of the R.A.V.C. in France during the War.

Parliamentary News

Veterinary Research.

MR. LEES asked the Minister of Agriculture whether his attention had been called to the financial situation of the Veterinary Research Institute of Camden Town ; and whether he would be prepared to recommend to the Chancellor of the Exchequer that a special grant be given to keep the institute in reasonable efficiency.

Dr. ADDISON replied : Yes, Sir. I am well aware of the financial position of the Animal Pathology Research Institute attached to the Royal Veterinary College at Camden Town. A scheme for the development and research in animal diseases upon a considerable scale is in an advanced stage of preparation, and will, I trust, be sanctioned and brought into operation at no distant date.

LIEUT.-COL. FREMANTLE asked the Minister of Agriculture when it was proposed that the scheme now being prepared for the developmen and co-ordination of veterinary medical research should be put into operation ; and whether an opportunity would be given to the House to discuss it before the details were finally decided.

Dr. ADDISON replied : The scheme is still under consideration, and I cannot yet say when it will be put into operation. The subject can, of course, be raised when the appropriate vote is before the House.

IN the House of Commons on Monday, June 8th, Mr. CHARLES WILLIAMS, M.P., asked the Minister of Agriculture whether it would be necessary for him to ask the House to pass a supplementary estimate in order to carry out the scheme now being prepared for the development of veterinary medical research.

Dr. ADDISON : I cannot say at present.

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Mr. WILLIAMS: Will the Minister give the House the assurance that he will not make any direct commitment on the taxpayer until he has consulted the House of Commons?

Dr. ADDISON replied that he could not give a guarantee of that kind.

Irish Free State Veterinary Surgeons Bill Modified.

ON the report stage of the Veterinary Surgeons Bill in the Dail Eireann an amendment was agreed to providing that no person, unless he is a registered veterinary surgeon, shall be entitled to recover in any legal proceedings any fee or charge for any veterinary surgical or veterinary medical advice or attendance given by him, or any veterinary surgical operation performed by him.

A Ministerial amendment was also agreed to providing that it should not be unlawful for any farmer or other person who habitually kept animals for profit, or his servant, to perform on, or administer any operation or medicine to an animal, the performing or administering of which is incidental to the usual care and management of such animals, provided such person did not hold himself out as a registered veterinary surgeon.

The report stage was passed.

News

Agricultural Organisers' Conference.

A CONFERENCE of the Agricultural Organisers is to be held at Emmanuel College, Cambridge, from June 29th to July 3rd, 1931, the theme of which will be "Meat and Milk Production." The draft programme is as follows: Monday, June 29th, 7.30 p.m., Dinner at Emmanuel College (morning dress); reception by the Minister.

Tuesday, June 30th: Chairman of Opening Session—Professor F. L. Engledow, M.A. *Morning Session* (10 a.m. to 12.30 p.m.): Introduction by Sir A. Daniel Hall, K.C.B., LL.D., F.R.S., "The Place of Meat and Milk Production in Future Farming Policy," followed by general discussion. *Afternoon Session* (2 to 3 p.m.): "The Place of Meat and Milk Production in the Present Farming Policy in one of the Eastern Counties," R. McG. Carslaw, M.A., followed by questions and discussion. (3 to 4 p.m.): "The Economics of Milk Production," J. Wyllie, B.Sc., N.D.A., N.D.D., followed by questions and discussion.

Wednesday, July 1st.—*Morning Session* (9.30 to 10.30 a.m.)—"Bovine Tuberculosis," by Professor J. B. Buxton, M.A., F.R.C.V.S. (10.30 to 11 a.m.) Questions and discussion. (11 a.m. to 12 noon) "Contagious Abortion," by W. H. Andrews, D.Sc. (12 to 12.30 p.m.) Questions and discussion. *Afternoon.*—Visit to University Farm, conducted by W. S. Mansfield, M.A., Director.

Thursday, July 2nd: *Morning Session* (9.30 to 11.30 a.m.)—"The Treatment of Milk for Human Consumption," by R. Stenhouse Williams, M.B., D.Sc., followed by questions and discussion. (11.30 a.m. to 12.30 p.m.)—"The Herd Life of a Dairy Cow," H. G. Sanders, Ph.D., followed by questions and discussion. *Afternoon Session* (2 to 3 p.m.)—"The Production of Mutton and Lamb (Hill breeds)," by Professor R. G. White, M.Sc. (3 to 4 p.m.)—"The Production of Mutton and Lamb (on Arable Land)," by Major V. S. Bland, M.C. (4 to 5 p.m.)—"The Production of Mutton and Lamb (on Grassland)," by Mr. A. C. Hill. Each paper will be followed by a short discussion.

Friday, July 3rd: *Morning Session* (9.30 to 10.30 a.m.)—"Scientific Aspects of Flock Management," by J. Hammond, M.A. (10.30 to 11 a.m.)—Questions and discussion. (11 a.m. to 12 noon)—"Parasites of Sheep," by D. L. Taylor, B.V.Sc., M.R.C.V.S., D.V.H. (12 to 12.30 p.m.)—Questions and discussion.

Council of Agriculture for England.

THE thirty-sixth meeting of the Council of Agriculture for England was held on June 11th, at the Middlesex Guildhall, Westminster. The Chairman elected for the year, in succession to Mr. Denton Woodhead, was Mr. James Hamilton, farmer, of Old Garswood, Lancs. In the course of the discussion, the Parliamentary Secretary of the Ministry informed the Council that the question of new grades for milk under the Ministry of Health Regulations which now prescribe "Certified," "Grade A (T.T.)," "Grade A," and "Pasteurised," as well as other questions dealing with the law and regulations governing the sale of milk, were being actively considered by conferences of the various departments concerned. He hoped that conclusions and decisions would be arrived at before very long, when they would be published.

Sir George Courthope, K.B.E., M.P. (East Sussex), moved a resolution to the effect that the Government be thanked for the steps it had taken to see that the Royal Veterinary College was able to carry on for a further financial year in order to give the public further time to realise its financial responsibility towards veterinary science. This resolution was put to the meeting and carried.

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Personal

CONGRATULATIONS to Professor J. F. Craig, M.A., M.R.C.V.S., on being the recipient of the John Henry Steel Memorial Medal. This medal, which used to be of bronze but is now of gold, has only been awarded twenty times since its foundation in 1897, and is presented by the Council of the Royal College of Veterinary Surgeons as a reward of scientific merit for original work done on behalf of the profession.

MISS MARION STEWART, who recently graduated (1930) from the Glasgow College, and has since been in London practice, has met with a serious accident whilst on holiday at Minehead, being thrown from her horse whilst riding. Miss Stewart was unconscious when picked up, and her injuries were reported as serious. Further report is that progress is as well as can be expected.

BY the death of Major E. Victor Hobbs, M.R.C.V.S., which took place at Bournemouth on May 30th, the Greyhound Racing world has lost one of its most enthusiastic supporters. For some time Major Hobbs held an official position at the Wembley Stadium.

BY the death (as the result of a motor accident) of Mr. Theo. Marples, F.Z.S., the well-known sportsman and editor of *Our Dogs*, the members of the veterinary profession have lost one of their best friends. In all questions of doggy etiquette between the dog-owning public and the veterinary world, the opinion of Mr. Marples, as Editor of *Our Dogs*, could always be relied upon as giving an impartial, fair, and well-considered view ; and the great success of the paper at the commencement of its career was almost entirely due to his perseverance and journalistic acumen. He died, as he would have wished, in harness, for although eighty-four years of age, and living in Manchester, he had travelled to Torquay, having been requested to act as one of the judges, and it was when motoring home that an accident occurred with another car, Mr. Marples receiving severe injuries, from which he never recovered consciousness.

MR. F. T. FINNEY, M.R.C.V.S., who recently died at Newcastle-on-Tyne, was, in his younger days, a well-known Rugby player, having played for Northumberland on several occasions. He graduated from the Royal (Dick) Veterinary College in 1889.

Publishers' Notices

All communications should be addressed to 7 & 8, Henrietta Street, Covent Garden, London, W.C. 2. Telephone : Temple Bar 4646. Telegrams : "Baillière Phone, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Copy of advertisements should be in the hands of the publishers — Baillière, Tindall and Cox — not later than the 25th of the month, or if proof is required, not later than the 23rd.

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